

Appellants' Brief on Appeal  
S/N: 10/665,564

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of

Degenaro, et al.

**Serial No.: 10/665,564**

Group Art Unit: 2165

Filed: September 22, 2003

Examiner: Syed, F.

For: **VIRTUAL RESOURCES METHOD, SYSTEM, AND SERVICE**

Commissioner of Patents  
Alexandria, VA 22313-1450

**APPELLANTS' BRIEF ON APPEAL**

Sir:

Appellants respectfully appeal the final rejection of claims 1-37 in the Office Action mailed on September 19, 2006. A Notice of Appeal was timely filed on December 19, 2006. Concurrently filed herewith is a Petition to Revive an Unintentionally Abandoned Application.

**I. REAL PARTY IN INTEREST**

The real party in interest is International Business Machines Corporation, assignee of 100% interest of the above-referenced patent application.

**II. RELATED APPEALS AND INTERFERENCES**

There are no other appeals or interferences known to Appellants, Appellants' legal representative or Assignee which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

### **III. STATUS OF CLAIMS**

Claims 1-37, all the claims presently pending in the application, stand rejected under 35 U.S.C. § 102(a) as being anticipated by Funderburk et al. ("XTABLES: Bridging Relational Technology and XML").

This rejection respectfully is traversed in the following discussion.

### **IV. STATUS OF AMENDMENTS**

An Amendment Under 37 CFR §1.116 was filed on November 20, 2006. In the Advisory Action mailed on December 7, 2006, the Examiner indicated that the additional arguments in the Amendment Under 37 CFR §1.116 were not persuasive and that the Amendment would not be entered. Therefore, the attached claims reflect the version of the claims in the Amendment Under 37 CFR §1.111 filed on June 20, 2006.

**V. SUMMARY OF CLAIMED SUBJECT MATTER**

The bases in the specification for the independent claims are as follows:

1. (Rejected) A method of developing actual resources without alteration (line 21 of page 11 through line 5 of page 12; line 20 of page 12 through line 1 of page 13; lines 20-16 of page 36) into a collection of virtual resources customized to a particular audience (e.g., line 13 of page 1 through line 22 of page 2; lines 1-7 of page 32), said method comprising:

constructing at least one virtual resource independent of an actual resource (line 21 of page 14 through line 8 of page 15; line 21 of page 15 through line 2 of page 16; lines 3-6 and 23-24 of page 18; 1240 of Figure 12; lines 20-23 of page 30);

connecting the actual resource to the at least one virtual resource (lines 3-6 of page 18; lines 19-21 of page 19; 1240 of Figure 12; lines 20-23 of page 30);

retrieving the at least one virtual resource (lines 7-16 of page 18; Figure 5; lines 6-8 of page 21; 1250 of Figure 12; lines 22-23 of page 30); and

extracting at least one descriptor from said at least one retrieved virtual resource (Figure 5; line 15 of page 21 through line 2 of page 22).

14. (Rejected) A system for developing actual resources without alteration (line 21 of page 11 through line 5 of page 12; line 20 of page 12 through line 1 of page 13; lines 20-16 of page 36) into a collection of virtual resources customized to a particular audience (e.g., line 13 of page 1 through line 22 of page 2; lines 1-7 of page 32), said system comprising:

means for constructing at least one virtual resource independent of at least one actual resource (line 21 of page 14 through line 8 of page 15; line 21 of page 15 through line 2 of page 16; lines 3-6 and 23-24 of page 18; 1240 of Figure 12; lines 20-23 of page 30);

means for connecting at least one actual resource to at least one virtual resource (lines 3-6 of page 18; lines 19-21 of page 19; 1240 of Figure 12; lines 20-23 of page 30);

means for retrieving said at least one virtual resource (lines 7-16 of page 18; Figure 5; lines 6-8 of page 21; 1250 of Figure 12; lines 22-23 of page 30); and

means for extracting at least one descriptor from said at least one retrieved virtual resource (Figure 5; line 15 of page 21 through line 2 of page 22).

27. (Rejected) In a system (Figure 12) comprised of a plurality of actual resources (1210 of Fig. 12), a service to manage descriptions of said actual resources, said service comprising:

defining at least one virtual domain to satisfy a user-requirements analysis (lines 5-7 of page 32); and

defining at least one virtual resource describing as least one actual resource within the at least one virtual domain to satisfy the user-requirements analysis (lines 5-7 of page 32).

31. (Rejected) A method of deploying computing infrastructure in which computer-readable code is integrated into a computing system, such that said code and said computing system combine to perform a method of developing said actual resources without alteration (line 21 of page 11 through line 5 of page 12; line 20 of page 12 through line 1 of page 13; lines 20-16 of page 36) into a collection of virtual resources customized to a particular audience (e.g., line 13 of page 1 through line 22 of page 2; lines 1-7 of page 32), said method comprising:

constructing at least one virtual resource independent of said actual resources (line 21 of page 14 through line 8 of page 15; line 21 of page 15 through line 2 of page 16; lines 3-6 and 23-24 of page 18; 1240 of Figure 12; lines 20-23 of page 30);

connecting at least one actual resource to at least one virtual resource (lines 3-6 of page 18; lines 19-21 of page 19; 1240 of Figure 12; lines 20-23 of page 30);

performing at least one retrieval of a virtual resource (lines 7-16 of page 18; Figure 5; lines 6-8 of page 21; 1250 of Figure 12; lines 22-23 of page 30); and

extracting at least one descriptor from said at least one retrieved virtual resource (Figure 5; line 15 of page 21 through line 2 of page 22).

32. (Rejected) A computer-readable medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of developing said actual resources without alteration (line 21 of page 11 through line 5 of page 12; line 20 of page 12 through line 1 of page 13; lines 20-16 of page 36) into a collection of virtual resources customized to a particular audience (e.g., line 13 of page 1 through line 22 of page 2; lines 1-7 of page 32), said method comprising:

constructing at least one virtual resource independent of said actual resources (line 21 of page 14 through line 8 of page 15; line 21 of page 15 through line 2 of page 16; lines 3-6 and 23-24 of page 18; 1240 of Figure 12; lines 20-23 of page 30);

connecting at least one of said actual resources to said at least one virtual resource (lines 3-6 of page 18; lines 19-21 of page 19; 1240 of Figure 12; lines 20-23 of page 30);

performing at least one retrieval of said virtual resource (lines 7-16 of page 18; Figure 5; lines 6-8 of page 21; 1250 of Figure 12; lines 22-23 of page 30); and

extracting at least one descriptor from said at least one retrieved virtual resource (Figure 5; line 15 of page 21 through line 2 of page 22).

33. (Rejected) A method of developing actual resources without alteration (line 21 of page 11 through line 5 of page 12; line 20 of page 12 through line 1 of page 13; lines 20-16 of page 36) into a collection of virtual resources customized to a particular audience (e.g., line 13 of page 1 through line 22 of page 2; lines 1-7 of page 32), said method comprising:

constructing at least one virtual resource independent of an actual resource (line 21 of page 14 through line 8 of page 15; line 21 of page 15 through line 2 of page 16; lines 3-6 and 23-24 of page 18; 1240 of Figure 12; lines 20-23 of page 30); and

providing in the at least one virtual resource a structured meta-data layer which contains semantic information for leveraging by a consumer of the virtual resources (line 2 of page 32 through line 5 of page 38).

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Appellants present the following single issue for review by the Board of Patent Appeals and Interferences:

### **ISSUE 1: THE ANTICIPATION REJECTION FOR CLAIMS 1-37 BASED FUNDERBURK**

Whether the rejection for claims 1-37 should be maintained under 35 U.S.C. § 102(a) as anticipated by Funderburk et al. ("XTABLES: Bridging Relational Technology and XML").

## **VII. ARGUMENTS**

### **ISSUE #1: THE REJECTION BASED ON FUNDERBURK ET AL**

The Examiner alleges that Funderburk et al. teaches the claimed invention. Appellant submits, however, that there are elements of the claimed invention which are neither taught nor suggested by Funderburk et al.

Funderburk et al. discloses XTABLES, a system that automatically maps the schema and data of an underlying relational database system to a low-level default XML view.

The claimed invention, on the other hand, constructs a virtual resource independent of an actual resource. As shown in Figure 1, the virtual resources of the present invention are stored in a virtual resources repository 140.

Funderburk et al. teaches how to transform relational data into XML data: "the ability to create XML views of existing relational data." See Funderburk et al., page 616. Funderburk et al. does not teach how to develop actual resources into virtual resources where an actual resource may be "data (e.g., databases, Java® object attributes, etc.) or functions (e.g., SQL queries, Java® object method calls, etc.)." See Appellants' specification, page 14, line 23.

Nor is such translating obvious or easily contemplated given Funderburk et al.

That is, the provision in Funderburk et al. of an "ability to create XML" does not result in "virtual resources" as defined in Applicant's specification. Funderburk et al. describes a uniform transformation from one data format to another. The present application, by contrast, describes a structured, but not uniform, way to transform a set of resources (where as mentioned before resources are not restricted to data) and their relationships, into a set of virtual resources and virtual relationships. The transformation leading to one virtual resource is not necessarily the same as the transformation leading to another virtual resource.

In other words, Funderburk et al. only teaches data representation transformation (e.g., database to XML), while the present invention is drawn to facilities creating a new virtual object from one or more existing (and/or imagined) objects. See pages 36-37 of the application specification, where an actual resource object containing a method for setting age is transformed into a new virtual resource object.

The new virtual resource object has a method for setting age that puts constraints on the valid values to which age can be set different from those in the actual resource. This capability cannot be done or even imagined given Funderburk et al.

The Office alleges that Funderburk et al. teaches constructing at least one virtual resource independent of an actual resource. As best understood by Appellants, the Office's reasoning appears to be as follows: XTABLES creates relational tables for storing XML documents. XTABLES shreds XML documents and stores them in rows of the relational tables. XTABLES generates a reconstruction XML view over the created relational tables. The reconstruction XML view is a "virtual" view that is independent of the original XML documents, and thus the Office contends that Funderburk et al. teaches constructing at least one virtual resource (the reconstruction XML view) independent of an actual resource (the original XML documents).

Appellants respectfully disagree.

Thus, Appellants disagree with the statement in lines 1 and 2 on page 5 of the Office Action mailed on September 19, 2006, which states that "the XML document view is not driven by the relational data, instead uses XTABLE to create the virtual resource."

On the contrary, the XML document view depends directly from the underlying data structure.

More specifically, XTABLES creates relational tables for storing XML documents. XTABLES creates the XML views of “existing relational data ... by automatically mapping the schema and data of the underlying relational database system to a low-level default XML view.” Users can then “create application-specific XML views on top of the default XML view. See, *inter alia*, page 616, col. 2, first full paragraph.

Thus, Funderburk, et al., teaches that the XML views depend on the existing relational data. Funderburk, et al., teaches that the XML views are built in a step-wise fashion, with each step being dependent on the previous step, and all of the steps depending directly on the schema and data of the underlying, existing relational data. The Office has not shown, nor can it establish *prima facie* based on the disclosure, that Funderburk et al. anticipates constructing at least one virtual resource independent of an actual resource.

Funderburk, et al., does not disclose or even remotely suggest that the XTABLES can construct XML views independent of an actual resource. Funderburk, et al., does not teach an XML view independent of an actual resource. Appellants urge that XTABLES simply provides a conversion (a bridge) from one representation (relational database and relational database queries) to another (XML and XML queries).

Indeed, Funderburk, et al., states in the abstract that the purpose of XTABLES is to bridge two different data representation formats, namely, XML and relational databases. The bridge is needed because Internet-based applications use XML for data-exchange, while (presumably) non-Internet-based applications still use relational database technology. Funderburk states that XTABLES does nothing more, however, than provide two different representations of the same data.

More particularly, the XTABLES process disclosed by Funderburk begins by creating “XML document views.” The only purpose of an XML document view is to “store” XML documents. XML document views generated by XTABLES are “*nothing but XML views of relational data*.” (Emphasis in the original.) See Funderburk et al., page 631, second column, third full paragraph. Funderburk et al. discloses that “views can be Docket YOR920030126US1 (YOR.447)



defined on top of views to achieve higher levels of abstraction" of the underlying data. See page 620, the full paragraph in col. 1. The purpose of abstractions, however, is to represent specifics. Indeed, rather than disclosing the present invention, Funderburk et al. teaches away from constructing a resource independent of an actual resource.

Moreover, Funderburk et al. does not teach or suggest constructing a virtual resource. As noted above, XTABLES creates views of existing relational data. Consequently, the views cannot be "virtual."<sup>1</sup> If the underlying data did not exist, neither would the view: XTABLES would have nothing from which to create the XML document view.

Therefore, by definition, according to Funderburk et al., an XML document view is a view of existing relational data. Funderburk et al. provides solutions to problems limited to relational data and XML. The Office attempts to improperly expand Funderburk et al. beyond its disclosure in an improper application of hindsight reconstruction based on Appellants' disclosure.

Therefore, Appellants submit that there are elements of the claimed invention that are not taught or suggested by Funderburk et al. Therefore, the Board is respectfully requested to withdraw this rejection.

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<sup>1</sup> In this context, Appellants note that the term "virtual" as used in Funderburk et al. describes that the "conversion" from relational data format to XML format is done 'virtually' -- that is, without physically generating a copy of the data.

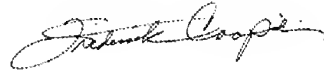
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## CONCLUSION

In view of the foregoing, Appellants submit that claims 1-37, all the claims presently pending in the application, are clearly enabled and patentably distinct from the prior art of record and in condition for allowance. Thus, the Board is respectfully requested to remove all rejections of claims 1-37.

Please charge any deficiencies and/or credit any overpayments necessary to enter this paper to Assignee's Deposit Account number 50-0510.

Respectfully submitted,



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## **VIII. CLAIMS APPENDIX**

Claims, as reflected upon entry of the Amendment Under 37 CFR §1.111 filed on June 20, 2006:

1. (Rejected) A method of developing actual resources without alteration into a collection of virtual resources customized to a particular audience, said method comprising:

constructing at least one virtual resource independent of an actual resource;  
connecting the actual resource to the at least one virtual resource;  
retrieving the at least one virtual resource; and  
extracting at least one descriptor from said at least one retrieved virtual resource.

2. (Rejected) The method of claim 1, wherein said connecting comprises directly mapping the at least one actual resource to the at least one virtual resource.

3. (Rejected) The method of claim 1, wherein the constructing comprises at least one of: renaming a method; hiding a method; composing a method; renaming an attribute; hiding an attribute; composing an attribute; assigning to at least one domain; designating as a collection; assigning to at least one validator; assigning a description; designating as at least one of ready and not ready; and assigning a last modified date and time.

4. (Rejected) The method of claim 1, wherein said at least one virtual resource comprises a plurality of virtual resources and said virtual resources are connected to each

other through a relationship carrying semantic that can be leveraged by a consumer of resources, said method further comprising:

- constructing at least one virtual relationship between at least two virtual resources;
- coupling at least one actual relationship implementor to at least one virtual relationship;
- performing at least one retrieval of a virtual relationship; and
- extracting at least one descriptor from at least one retrieved virtual relationship.

5. (Rejected) The method of claim 4, wherein said coupling comprises:  
directly mapping said at least one actual relationship implementor to said at least one virtual relationship.

6. (Rejected) The method of claim 4, wherein the relationship constructing comprises at least one of:

- assigning a root virtual resource name;
- assigning a target virtual resource name;
- assigning a relationship name;
- assigning a relationship type;
- assigning a description;
- assigning a target instance naming scheme;
- designating as at least one of ready and not ready; and
- assigning a last modified date and time.

7. (Rejected) The method of claim 4, wherein the retrieving comprises locating virtual relationships by at least one of:

- a domain;
- a name;
- a root;
- a type; and
- a target.

8. (Rejected) The method of claim 1, wherein virtual resources are connected to each other, said method further comprising:

- constructing at least one virtual relationship between at least two virtual resources;
- coupling at least one actual relationship implementor to at least one virtual relationship;
- performing at least one retrieval of a virtual relationship; and
- extracting at least one descriptor from at least one retrieved virtual relationship.

9. (Rejected) The method of claim 8, wherein said coupling comprises:  
directly mapping said at least one actual relationship implementor to said at least one virtual relationship.

10. (Rejected) The method of claim 8, wherein the relationship constructing comprises at least one of:

- assigning a root virtual resource name; assigning a target virtual resource name;
- assigning a relationship name;
- assigning a relationship type;
- assigning a description;
- assigning a target instance naming scheme;
- designating as at least one of ready and not ready; and
- assigning a last modified date and time.

11. (Rejected) The method of claim 1, wherein the retrieving comprises locating virtual resources by at least one of:

- a domain;
- a name; and
- a relationship.

12. (Rejected) The method of claim 8, wherein the retrieving comprises locating virtual relationships by at least one of:

- a domain;
- a name;
- a root;
- a type; and
- a target.

13. (Rejected) The method of claim 2, wherein descriptor validator information is employed to limit actual resource usage.

14. (Rejected) A system for developing actual resources without alteration into a collection of virtual resources customized to a particular audience, said system comprising:

means for constructing at least one virtual resource independent of at least one actual resource;

means for connecting at least one actual resource to at least one virtual resource;

means for retrieving said at least one virtual resource; and

means for extracting at least one descriptor from said at least one retrieved virtual resource.

15. (Rejected) The system of claim 14, wherein said means for connecting comprises means for directly mapping the at least one actual resource to the at least one virtual resource.

16. (Rejected) The system of claim 14, wherein the means for constructing performs at least one of:

renaming a method;

hiding a method;

composing a method;

renaming an attribute;

hiding an attribute;  
composing an attribute;  
assigning to at least one domain;  
designating as a collection;  
assigning to at least one validator;  
assigning a description;  
designating as at least one of ready and not ready; and  
assigning a last modified date and time.

17. (Rejected) The system of claim 14, wherein virtual resources are connected to each other through a relationship carrying semantic that can be leveraged by a consumer of resources, comprising means for constructing at least one virtual relationship between at least two virtual resources; means for coupling at least one actual relationship implementor to at least one virtual relationship; means for performing at least one retrieval of a virtual relationship; and means for extracting at least one descriptor from at least one retrieved virtual relationship.

18. (Rejected) The system of claim 17, wherein said means for coupling comprises:

means for directly mapping said at least one actual relationship implementor to said at least one virtual relationship.



19. (Rejected) The system of claim 17, wherein the means for constructing at least one virtual relationship performs at least one of:

- assigning a root virtual resource name;
- assigning a target virtual resource name;
- assigning a relationship name;
- assigning a relationship type;
- assigning a description;
- assigning a target instance naming scheme;
- designating as at least one of ready and not ready; and
- assigning a last modified date and time.

20. (Rejected) The system of claim 14, wherein the means for retrieving performs locating virtual relationships by at least one of:

- a domain;
- a name;
- a root;
- a type; and
- a target.

21. (Rejected) The system of claim 14, wherein virtual resources are connected to each other, said system further comprising:

means for constructing at least one virtual relationship between at least two virtual resources;

means for coupling at least one actual relationship implementor to at least one virtual relationship;

means for performing as least one retrieval of a virtual relationship; and

means for extracting at least one descriptor from at least one retrieved virtual relationship.

22. (Rejected) The system of claim 21, wherein said means for coupling comprises:

means for directly mapping said at least one actual relationship implementor to said at least one virtual relationship.

23. (Rejected) The system of claim 21, wherein the means for constructing a relationship comprises at least one of:

means for assigning a root virtual resource name;

means for assigning a target virtual resource name;

means for assigning a relationship name;

means for assigning a relationship type;

means for assigning a description;

means for assigning a target instance naming scheme;

means for designating as at least one of ready and not ready; and

means for assigning a last modified date and time.

24. (Rejected) The system of claim 21, wherein the means for retrieving comprises locating virtual resources by at least one of:

a domain;

a name; and

a relationship.

25. (Rejected) The system of claim 21, wherein the means for retrieving comprises locating virtual relationships by at least one of:

a domain;

a name;

a root; and

a target.

26. (Rejected) The system of claim 15, wherein descriptor validator information is employed to limit actual resource usage.

27. (Rejected) In a system comprised of a plurality of actual resources, a service to manage descriptions of said actual resources, said service comprising:

defining at least one virtual domain to satisfy a user-requirements analysis; and

defining at least one virtual resource describing as least one actual resource within the at least one virtual domain to satisfy the user-requirements analysis.

28. (Rejected) The service of claim 27, further comprising:  
analyzing a requirement for actual resource usage, to provide said user requirements analysis.

29. (Rejected) The service of claim 27, further comprising:  
defining at least one virtual relationship between at least two virtual resources.

30. (Rejected) The service of claim 29, wherein at least one of a virtual resource and a virtual relationship is utilized to create an application program.

31. (Rejected) A method of deploying computing infrastructure in which computer-readable code is integrated into a computing system, such that said code and said computing system combine to perform a method of developing said actual resources without alteration into a collection of virtual resources customized to a particular audience, said method comprising:

constructing at least one virtual resource independent of said actual resources;  
connecting at least one actual resource to at least one virtual resource;  
performing at least one retrieval of a virtual resource; and  
extracting at least one descriptor from said at least one retrieved virtual resource.

32. (Rejected) A computer-readable medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method of developing said actual resources without alteration into a collection of virtual resources customized to a particular audience, said method comprising:

constructing at least one virtual resource independent of said actual resources;  
connecting at least one of said actual resources to said at least one virtual resource;  
performing at least one retrieval of said virtual resource; and  
extracting at least one descriptor from said at least one retrieved virtual resource.

33. (Rejected) A method of developing actual resources without alteration into a collection of virtual resources customized to a particular audience, said method comprising:

constructing at least one virtual resource independent of an actual resource; and  
providing in the at least one virtual resource a structured meta-data layer which contains semantic information for leveraging by a consumer of the virtual resources.

34. (Rejected) The method of claim 33, wherein said semantic information includes relationships with agreed upon semantics including any of "related-to", "contains", and "is-conflicting-with", between entities.

35. (Rejected) The method of claim 33, wherein said semantic information allows any of making new resource manipulation operations available to logic authoring tools and serving as an input to a conflict detection tool.

36. (Rejected) The method of claim 1, further comprising:  
creating at least one virtual resource instance;  
assigning an identity to the at least one virtual resource instance; and  
associating the at least one virtual resource instance with one virtual resource.

37. (Rejected) The method of claim 4, further comprising:  
creating at least one virtual relationship instance;  
assigning an identity to the at least one virtual relationship instance; and  
associating the at least one virtual relationship instance with one virtual relationship.

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**IX. EVIDENCE APPENDIX**

**(NONE)**

**X. RELATED PROCEEDINGS APPENDIX**

**(NONE)**